CLAIMS

What is claimed is:

1. A composition for enhancing immune response in an animal, comprising:

a peptide selected from the group SEQ. ID. NO: 1, SEQ. ID. NO: 3, SEQ. ID. NO: 4, SEQ. ID. NO: 5, SEQ. ID. NO: 6, SEQ. ID. NO: 7, and functional equivalents.

2. The composition of claim 1, further including a first antigen.

3. The composition in claim 2, wherein the first antigen is cholera toxin.

4. The composition in claim 2, wherein the peptide and first antigen comprise a fusion protein.

5. The composition of claim 1, wherein the composition is capable of mucosal administration.

6. The composition of claim 1, wherein the composition is a systemic adjuvant.

7. The composition of claim 1, wherein the composition is a mucosal adjuvant.

8. The composition of claim 1, wherein the composition is a epidermal adjuvant.

9. A method of enhancing immune response in an animal comprising:

administering a peptide selected from the group SEQ. ID. NO: 1, SEQ. ID. NO: 3, SEQ. ID. NO: 4, SEQ. ID. NO: 5, SEQ. ID. NO: 6, SEQ. ID. NO: 7, and functional equivalents, to the animal.

10. The method of claim 9, further including administering a first antigen to the animal.

11. The method of claim 10, wherein the first antigen is cholera toxin.

12. The method of claim 11, wherein the peptide and the first antigen comprise a fusion protein.

13. The method of claim 9, wherein the peptide is administered mucosally.

14. A method for delivering a cargo protein to an animal cell, comprising:

constructing a fusion protein including:

a peptide selected from the group SEQ. ID. NO: 1, SEQ. ID. NO: 3, SEQ. ID. NO: 4, SEQ. ID. NO: 5, SEQ. ID. NO: 6, SEQ. ID. NO: 7, and functional equivalents; and

a cargo protein, wherein the cargo protein is linked to the peptide; and

administering the fusion protein to the animal.

15. The method of claim 14, wherein delivering the fusion protein includes binding to the animal cell.

16. The method of claim 14, wherein delivering the fusion protein includes penetrating a membrane of the animal cell.

17. The method of claim 14, wherein the cargo protein is a first antigen.

18. The method of claim 17, wherein the fusion protein presents the first antigen to the immune system of the animal.

19. The method of claim 17, wherein the first antigen is a cholera toxin.

20. The method of claim 14, wherein the fusion protein is encoded by a DNA sequence capable of being incorporated into a viral DNA vector.

21. A genetically-modified living cell capable of enhancing immune response in an animal, comprising:

a first DNA sequence encoding a peptide selected from the group SEQ. ID. NO: 1, SEQ. ID. NO: 3, SEQ. ID. NO: 4, SEQ. ID. NO: 5, SEQ. ID. NO: 6, SEQ. ID. NO: 7, and functional equivalents.

22. The genetically-modified living cell of claim 21, further including a second DNA sequence encoding a first antigen.

23. The genetically-modified living cell of claim 22, wherein the first antigen is a cholera toxin subunit.

24. The genetically-modified living cell of claim 21, wherein the peptide is capable of enhancing a mucosal immune response in the animal.

25. The genetically-modified living cell of claim 22, wherein SEQ. ID. NO: 8 comprises the first DNA sequence and the second DNA sequence.

26. The genetically modified living cell of claim 22, wherein the first DNA sequence and the second DNA sequence code for SEQ. ID. NO: 9.

27. The genetically-modified living cell of claim 22, wherein the peptide is genetically fused to the first antigen.

28. A method for constructing a fusion protein for enhancing immune response in an animal, comprising:

constructing a vector including a first DNA molecule encoding for a peptide selected from the group SEQ. ID. NO: 1, SEQ. ID. NO: 3, SEQ. ID. NO: 4, SEQ. ID. NO: 5, SEQ. ID. NO: 6, SEQ. ID. NO: 7; and

linking the vector to a second DNA molecule encoding for a first antigen.